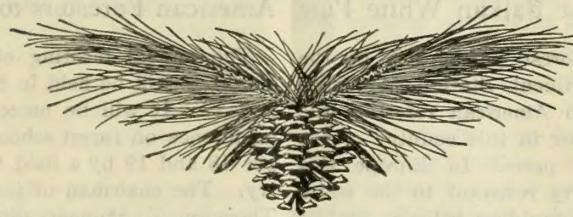


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Announcements

Foresters Urged to Test Balkan White Pine

Dr. Perley Spaulding, forest pathologist at the Northeastern Forest Experiment Station, Amherst, Mass., strongly urges upon American foresters the importance of prompt testing in this country of the Balkan white pine, *Pinus peuce*. In Europe this species has proved itself very resistant to the white pine blister rust. Doctor Spaulding believes that it will grow well in this country, particularly in the colder situations. He recommends that everyone who is in charge of planting operations within the areas infected or threatened with the blister rust procure a few hundred young trees of this species for careful test in the forest. For this purpose one-half to 1 pound of the seed should be obtained from European dealers in tree seeds and planted in local nurseries near the final planting grounds. The seed normally require a full year to germinate, but this delay can be avoided if, before being planted, the seed are treated for about 10 minutes with sulphuric acid and then washed with some alkaline solution. Germination may be hastened also by stratifying the seed over winter.

Connecticut Forestry Association Offices Moved

The offices of the Connecticut Forestry Association have been moved from Sage Hall, Yale University, to the second floor of the Bradley Building, 215 Church Street, New Haven, Conn.

Because the edition of this periodical is necessarily limited, its free distribution outside of the Government service is restricted to such persons and organizations as State forestry and conservation officials, State agricultural extension directors, faculties and libraries of forest schools, and forestry associations. Others desiring to obtain copies of the Forest Worker can do so by sending 5 cents for a single copy or 25 cents for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign subscriptions: Yearly, 35 cents; single copies, 7 cents.

Material offered for publication in the Forest Worker should be addressed to the Editor, United States Forest Service, Washington, D. C.

American Foresters to Meet in San Francisco

The annual meeting of the Society of American Foresters will be held in San Francisco, December 16 and 17. It will be preceded on December 15 by a conference on forest schools, and followed on December 18 and 19 by a field trip into the redwood country. The chairman of the committee on meetings is Thornton T. Munger, director of the Pacific Northwest Forest Experiment Station, Portland, Oreg., who is being assisted by E. I. Kotok, director of the California Forest Experiment Station, Berkeley, Calif.

State Parks Conference

The Eighth National Conference on State Parks is scheduled to be held in San Francisco, June 26-29, 1928.

American Forestry Association Meeting

The annual meeting of the American Forestry Association will be held in St. Louis, February 17 and 18.

Chamber of Commerce Conference

The editor of the Forest Worker regrets that notice of the final plans for the conference on commercial forestry arranged by the United States Chamber of Commerce, originally scheduled for October 18-20 but postponed to November 16-17, did not reach him in time to be announced in the Forest Worker of September. The conference was held in Chicago.

FOREST WORKER

Washington, D. C.

NOVEMBER, 1927

Vol. 3, No. 6

State Forestry

Fire Line Construction Meeting at Waycross, Ga.

A fire-line construction meeting was held on August 31 and September 1 at Waycross, Ga., at which seven different outfits of machinery for making fire lines were demonstrated before a crowd of 1,000. The meeting was arranged by the Waycross and Ware County Chamber of Commerce, and was presided over by State Forester Lufburrow.

In the morning session that preceded the demonstration R. E. Benedict, of Brunswick, analyzed the fire problem of the region surrounding Waycross, where, he said, in 15 out of 25 years there occurred periods in which the monthly rainfall was less than 1 inch.

I. F. Eldredge told of the fire-line system now being developed on the Suwanee Forest, where the land is level, with many cypress ponds and bays, and where areas of young growth are interspersed among older stands. The primary system of lines now being laid will cut the forest into blocks of from 200 to 3,000 acres, according to the age of the timber. The fire line usually centers on a highway or woods road. Snags and dead trees are removed from the line and from a 30 to 60 foot space on each side of it. The line is made by plowing two furrows, 50 to 100 feet distant from each other, with a tractor equipped with a side disk plow. The space between the furrows is then burned. One man or boy pilots the tractor, one man drives it, and a third follows to flip back the occasional turf that fails to stay put. Two men equipped with blue-flame gasoline torches set the fire, and two men with back pumps see to it that the fire does not jump the furrows. A truck follows with casks of water. Mr. Eldredge estimates the cost of a line constructed in this way at from \$5 to \$7 a mile. Last year, he said, ponds, bays, and creek swamps were used as parts of primary fire lines, but it was found that "in a period of extreme drought such places don't stay wet, and when dry they are more inflammable than the hill lands." Primary lines are now being located on hill land wherever this is possible. The secondary system is to be worked out as it becomes clear where greater protection is most needed. Secondary lines will vary in width from a single plowed furrow to a strip 50 feet

wide. They will often be laid between ponds and heads and along bays and swamps to protect the strips of slash pine found there. It is expected that lines must be burned annually, and that plowed lines will have to be renewed every three years.

Alex K. Sessoms described the system of fire lines which he and his associates are constructing on a tract of about 5,000 acres from which the stumps have been taken off. About seven furrows are plowed, in a line as straight as possible. The large roots are thrown out, then the ground is gone over with a double and a single disk harrow. A second such road is built 100 feet from the first, and the space between is burned over. It is expected that these strips of land will in a short time be grown over by carpet grass, which will make it unnecessary to repeat the burning. Mr. Sessoms said that he and his associates have had their worst trouble with fires in swamp land, and that they are trying to construct fire breaks even through swamps.

The field demonstration of machinery for building fire lines was held at Maryland Farms, near Waycross, on the first afternoon and second morning of the meeting. The performance of the seven outfits of machinery, which were tested in the construction of fire lines one-quarter mile long, was judged and reported on by seven men appointed in advance, and was discussed in the final session.

It was agreed that the meeting should be repeated annually, and should be broadened to include demonstrations of machinery used in the manufacture of forest products, exhibits of forest products, and demonstrations of marking and thinning timber. The Chamber of Commerce of Waycross and Ware County agreed to appoint a permanent committee to arrange for next year's meeting.



The State of West Virginia through its game and fish commission has entered into a cooperative agreement with the Federal Government for the production and distribution of forest planting stock under the provisions of section 4 of the Clarke-McNary law. For this purpose the State will establish a forest nursery on the Seneca State Forest.

Porto Rico Planting Work

By E. MURRAY BRUNER, United States Forest Service

(Based on the annual report of William P. Kramer, Chief of the Porto Rico Forest Service, for the fiscal year 1927)

During the year ending June 30, 1927, 678,984 tree seedlings were produced in the Government forest nurseries of Porto Rico. This production was materially larger than that of the previous year; nevertheless it fell short of meeting the local demand for planting stock. A new subnursery at Utuado which was put into operation in the summer of 1926 produced this spring a first crop of 27,361 seedlings. Of the 651,623 trees produced at the Rio Piedras nursery more than half, 377,022, were distributed to private landowners and other individuals, and 104,546 went to corporations; 48,021 were apportioned to Government departments; 6,900 were used in expositions, fairs, and exhibits; 4,680 went to individuals and corporations in outlying islands; and 110,454 were planted on the insular forests.

In the plantings on the insular forests no less than 16 different kinds of trees were used. About two-thirds of these plantings, however, were of Spanish cedar, mahogany (including both the West Indian, or narrow-leaf, and Venezuelan, or broad-leaf, varieties), Eucalyptus, and casuarina (so-called Australian pine).

Some 50 exotic species were propagated during the year in the Rio Piedras nursery. To introduce successfully so many exotic species requires no small amount of experimental work, involving the exercise of great care in germination and propagation practice. The production of exotics, such as certain species of Eucalyptus, that are especially delicate in the early stages of their development has been facilitated through the construction, a few years ago, of a glass propagation house provided with a number of small movable seedbeds. In 1926, also, there was provided a lath screen to cover a portion of the area into which the young seedlings are transplanted.

The tree most in demand with Porto Rican fruit growers for windbreak planting is the casuarina. A windbreak of three rows of casuarina trees was planted on the east side of the Rio Piedras nursery in July, 1924, and the growth of these trees has been observed carefully. At the time of planting these seedlings were 6 months of age and from 12 to 18 inches high. In the year ending June 30, 1927, the smallest of the trees added 6 feet to its height, the majority grew 13 feet, and one grew 17 feet.

Through several years of experimentation it has been found that in Porto Rico certain species, especially some having rather large and hard seed, such as the maria (*Calophyllum calaba*), can be propagated more successfully, as well as more economically, by planting the seed directly in the field rather than by raising seedlings and transplanting them. During the past year a total of 7,839 pounds of tree seed, comprising seven different species, was planted on the Maricao and Guanica Insular Forests.

Arrangements completed during the past year will make it possible for the Porto Rico Forest Service to offer much larger numbers of planting stock hereafter. The capacity of the nursery at Rio Piedras was enlarged by the addition of 27 concrete seed beds, 25 by 4 feet, to the 299 already in use; and as a supplement to this central nursery situated in the coastal plain a subnursery was established at Utuado, at an elevation of 1,000 feet. Here 210 concrete seed beds have been constructed, of which half are used for the propagation of coffee trees and half for shade trees for coffee plantations and species especially suited for forest planting in the mountain region of the interior.

Michigan Law Requires Slash Disposal Along Highways and Rights of Way

A Michigan law of 1927 requires the disposal within 30 days of slash from cutting of forest growth on public highways or land bordering highways, or cutting that results from the construction and maintenance of railroads or telephone, telegraph, or power lines or other public utilities. Such material must not be left within 100 feet of the highways or railroad rights of way. Dead stubs and windfalls, also, must be removed from areas cut over along highways. The manner and time of disposal must be such that property is not endangered. If the material is not disposed of by the person or firm responsible for the cutting within 30 days of cutting or within another 30-day period following notice from the State department of conservation, it may be disposed of by the department and the expenses recovered from the violator, who may also be punished with a fine not to exceed \$100 or imprisonment of not more than 90 days, or both. If violation of the act results in damage or injury to any property owner, the violator is subject to action for damages.



The first State forest of Illinois has been accepted as a gift from Col. and Mrs. C. C. Judy and their daughter Mary, of Menard County. The tract is located in Menard County, near the village of Tallula, and embraces 80 acres of virgin hardwood timber. It will be known as the Judy Memorial Park.



A memorial to the late Willard H. Jennings of Winchester, N. H., has been established by his widow and daughter in the form of a municipal forest. The 66-acre tract, cut-over land partly covered with young white-pine growth, is situated on a hill close to the village. Its presentation featured an American Forest Week celebration, with singing by school children, talks by foresters and town officials, and tree planting by high-school boys.

State Foresters Meet at Hartford, Conn.

The forestry organizations of 21 States were represented at the annual meeting of the Association of State Foresters which convened October 3 at Hartford, Conn. After taking a bird's-eye view of a large part of the State from the Travelers Tower of the Travelers Insurance Co., a structure 527 feet high which the Connecticut Forestry Department is privileged to use as a lookout, the party spent three days examining at closer range State and privately owned forests and forest plantations and a State forest nursery of Connecticut, then crossed over into Massachusetts and visited the Harvard Forest, at Petersham.

At the forest plantations of the Connecticut Agricultural Experiment Station near Rainbow, Conn., the visiting foresters saw the results of an elaborate series of experiments in seeding and planting, begun by Walter Mulford in 1901. The soil, a coarse sand, has been found unsuitable for all but a few species of hardwoods, but experiments in the growing of conifers have been very successful. In an effort to find a method of controlling the white pine weevil, this spring a small band of cotton was wrapped around each of a number of trees just below last year's whorl. Trees so treated do not show weevil attack, though some near-by untreated trees do. This visit was followed by one to the State forest nursery at Simsbury, where trees are grown for planting on State-owned land.

Turning south, the party visited the Meshomasic State Forest of 3,379 acres, of which 70 acres is the first land ever purchased in New England for State forest purposes, and the Saltonstall forest area of the New Haven Water Co., which, like the other forest land belonging to this company, is managed by Professor Hawley of Yale. Although the stand on the latter area has been damaged through the killing by blight of the chestnut that formerly constituted about half of it, and through severe cutting by previous owners, under forestry management it has more than paid its way for the past 20 years. A change in composition is now being brought about, from a pure hardwood stand to a mixed stand of hardwoods and hemlock. The forest includes an exceptionally fine stand of red pine, planted on open land in 1915 as three-year transplants.

At the Harris Whittemore estate of approximately 1,500 acres of woodland and plantations of ages ranging up to 20 years, in Middlebury and Woodbury, was seen an example of "estate forestry" combining aesthetic and commercial management.

The itinerary in the northwestern part of the State brought to view evidences of the generosity of Connecticut people in providing land for State forests, and of the State's willingness to spend money for this purpose—the Mohawk State Forest of 2,500 acres, most of which was given by the White Memorial Foundation; the Peoples' State Forest of 1,214 acres

entirely given by the Connecticut Forestry Association through special subscriptions and direct gifts of land; and, on the Massachusetts line, the Tunxis State Forest of 3,660 acres, purchased by the State at an average price of \$6.35 per acre.

Crossing into Massachusetts, the party visited one of the model miniature nurseries established by the Massachusetts Forestry Department for the educational and publicity effect. Next they were conducted by Prof. R. T. Fisher over the Harvard Forest. In this forest 11 types occur, comprising all the important types of the transition zone between the central hardwood and north woods regions. Here all the operations in the management of a tract under sustained yield, from the establishment of stands both by natural reproduction and by planting to the marketing of lumber, poles, cordwood, and other forest products, are carried on every year.

At the Harvard Forest one of the recent models of the pump chiefly used by the Massachusetts Forestry Department was shown in use. This pump, with a pressure of 85 pounds, threw a fire-fighting stream through a 1-inch hose 4,000 feet long.

Between times the travelers touched at New Haven and were entertained by the Connecticut Forestry Association with a smoker at Sage Hall, the home of the Yale Forest School, at which Dean Graves presided.

One of the evening meetings which followed the days of touring was given over to discussion of the cooperative work of the Federal and State Governments under the Clarke-McNary law. J. G. Peters, in charge of the work of the United States Forest Service under this law, presented a plan for simplifying the arrangements for cooperation in forest fire protection. He proposed that extra allotments to the States be determined on the basis of the amounts of State and private funds expended for forest fire protection during the previous year, instead of upon the basis of the amounts of such funds budgeted for expenditure for this purpose during the current year. Regular allotments would continue to be based upon the estimated cost of adequate protection. He proposed also that the States be reimbursed on a 50-50 basis until the Federal allotment is exhausted. All the State delegates present approved the suggestion. In the discussion of seed collection by the Forest Service in connection with cooperation under section 4 of the Clarke-McNary law, the State representatives were gratified to hear that some 5,000 bushels of red pine cones have been collected on the Minnesota National Forest, the seeds from which are to be distributed to the States cooperating under this section.



The American Legion is giving Connecticut a new State forest. The legion has already presented to the State an area of 213 acres, in Barkhamsted, and intends to add to this 109 acres on which it has an option.

FOREST WORKER

Cape Cod Committee Proposes 10-Year Reforestation Plan

The joint committee representing the Cape Cod Chamber of Commerce and the Massachusetts Forestry Association, under date of October 1, 1927, outlined a plan for reforestation activities on the cape for the next 10 years. This plan contemplates the establishment of town forests aggregating 10,000 acres and the extension of State forests to include a minimum of 10 per cent of the forest land; the provision of fire suppression equipment at each State forest and of a patrol truck and equipment by 10 of the towns; the maintenance of two forest fire patrolmen by the State in Barnstable County and of local patrolmen by 13 of the towns. It is also recommended that a small appropriation for trees to be given to landowners be made annually by each of the towns with waste lands; that the planting program on the present State forest be enlarged; that plantations on the Province lands, where the chief object is sand fixation, be extended; and that the output of the Shawme State Forest Nursery be increased to meet the planting needs of the cape.

Of the 252,000 acres of land on Cape Cod it is estimated that about 150,000 acres in the interior is better suited for forest production than for any other purpose. The State owns 8,300 acres in the Shawme State Forest, and a number of the towns have already established town forests.

The report, in referring to the fire protection experiment now being made on the cape, states that "the records since the beginning of the experiment show that with 11 per cent less money spent in the total cost of education, patrol, and suppression than was spent during a like period for suppression alone, the losses in acreage burned over have been reduced by 72 per cent. These results have been obtained during two exceptionally bad fire years in that district."

The report of the committee discusses fire patrol, fire-fighting equipment, insect control, blister rust, reforestation, and species for planting, and carefully points out the part in the cooperative enterprise that should be undertaken by the State, the towns, and the State forestry association. The members of the committee are Charles L. Ayling, chairman, Centerville; Edward S. Bryant, Boston; George E. Dean, Falmouth; Ralph S. Hosmer, Ithaca, N. Y.; Oscar C. Nickerson, Chatham; and Harris A. Reynolds, secretary, Boston.



A study of wood utilization in the vicinity of Hartford, Conn., is being made for the Connecticut Forestry Department by E. D. Fletcher. At present there is very little market for forest products in this part of the State, and it is desired to make information in regard to the forest resources of the territory available to industries that might in that way be attracted to it.

Four Cooperative Protection Projects in South Carolina

Organized protection from fire has just been undertaken on four forest properties in South Carolina, aggregating 158,000 acres, under cooperative agreements between the State forestry commission and the owners. These are the Myrtle Beach Estates, 66,000 acres; the Champion Fiber Co., 6,000 acres; the Carolina Fiber Co., 30,000 acres; and the Cooper River Timber Co., 56,000 acres.

On the Myrtle Beach property a newly built water tank on a steel tower structure 125 feet high will be used as a lookout.

The Carolina Fiber Co., Hartsville, S. C., is a pioneer in forest protection in South Carolina. About 1921 this company undertook the protection of an 8,000-acre tract of cut-over longleaf and loblolly pine land by means of carefully laid out fire lines around and through the property, following established roadways so far as was practicable. This was probably the first system of fire lines constructed in the State. The lines are burned annually, and the amount of young forest growth, 1 to 6 years old, that has been established within the protected blocks presents an excellent demonstration of the value of fire protection in the South Atlantic coastal plain.

Organized County Fire Protection in Virginia

Six counties of Virginia have recently been organized for forest fire control: Rappahannock, Greene, Madison, Warren, Orange, and Hanover. This brings the total number of counties in Virginia cooperating in forest fire protection to 55. The 6 counties named are organized, like 13 others, according to the provisions of section 541 of the Virginia Code as amended in 1926. Under this section fire suppression costs incurred by forest wardens in accordance with instructions from the State forester are paid by the county in which the fire occurs. The State pays for all forest warden services and furnishes tools and equipment for registered fire crews.

In anticipation of the forming of a forest fire protective area in the Dismal Swamp, the board of supervisors of Nansemond County have agreed to pay fire suppression costs, under the law just mentioned, for the part of the swamp contained in that county, and the Norfolk County supervisors have made \$2,000 available for a similar purpose for the current year.



A tract of 170 acres in the town of Plymouth, Vt., has been purchased by the State of Vermont as an addition to the Calvin Coolidge State Forest. An other recent purchase of the State adds 226 acres to the Ainsworth Forest Park, in Williamstown Gulf.

New York Forestry Tour

The fourth annual Adirondack forestry tour arranged by the New York Conservation Department and the farm bureaus of the State was a five-day pilgrimage of 100 people, beginning September 15. The participants must have been thinking in millions when they reached home, for they had visited the Saratoga nursery with its 44,000,000 trees and the Lake Clear nursery with its 24,750,000, the watershed on which Glens Falls has in 17 years planted more than 2,000,000 and the Roosevelt Forest on which the State planted that many last year, and even a private plantation of millions—the 7,000-acre property of T. C. Luther, in Saratoga County.

The route began in Utica and proceeded to Saratoga, to Lake George, to Saranac, and back to Albany. It led past old stands of white pine and of the spruce hardwood type; a forest infected with white pine blister rust and one that years ago was the scene of a disastrous fire; public camp sites maintained by the State; a lookout tower and a State fish hatchery; and forest plantations of many kinds and many ages.

Airplane Proves Successful in Maine Protection Work

An airplane was used by the Maine Forest Service in its fire protection work this year, and was found very useful in locating small fires and in reconnaissance of large fires. It proved especially helpful in the case of a 10,000-acre fire. Twice each day an observer flew over this fire and dropped at headquarters a map showing its progress and the points where it was burning most violently. In the opinion of forest officers it was largely owing to the use of the plane that they succeeded in putting this fire out without the help of rain.

The seven communities of Simpson County, Miss., are competing in a year-long fire-prevention contest. At the end of the year, in March, 1928, County Agent Stewart will award prizes to the communities that score the lowest percentages of timberland burned over. During the spring fire season the timbered area burned over in the county was held to the lowest recorded figure.

New Hampshire's first county forestry association has been formed in Merrimack County. Its purpose is to promote farm wood-lot development, and any wood-lot owner in the county is eligible for membership. Milton J. Walker, of Contoocook, was elected president and Thomas J. King, blister rust control agent of the county, secretary.

A forest of 61.6 acres near Dupont, Ind., has been given to the Nature Study Club of Indiana by William A. Guthrie, former head of the Indiana Conservation Commission, in memory of his wife, Sarah Lewis Guthrie. The deed specifies that the land shall be used for the study of the native timbers of the State. The society will maintain the tract as a forest preserve and wild-life sanctuary.

The percentage of survival in forest plantations in New York State averages between 80 and 90, according to the estimate of the State conservation department. This estimate is based on the examination of more than 300 sample plots in plantations averaging 10 years of age, scattered throughout the State.

A 40-year-old stand of old field shortleaf pine on the Wharton Estate near Atsion, Burlington County, N. J., is reported by the New Jersey Division of Forests and Parks to be growing at a rate of 484 board feet per acre per year. A plot was measured in 1922 and again in 1927. This growth has taken place in spite of excessive crowding, pines over 2 inches in diameter at breast height numbering 452 per acre.

Four new steel fire observation towers are soon to be erected by the Pennsylvania Department of Forests and Waters. Two 80-foot towers will replace old towers that have become unserviceable, one near Aristes, Columbia County, and one at the Freeland platform, in southern Luzerne County. A third 80-foot tower will be located in southern Cambria County, and one with a height of 60 feet is to be erected in the Broad Top region near the county line of Huntingdon and Fulton Counties.

Agents and patrolmen of the Texas Forest Service are exempt from jury service when engaged in the regular and active discharge of their duties, according to a recent act of the legislature.

Orders received at the State forest nursery of Kentucky this spring called for 40,000 trees, as compared with only 12,000 ordered last spring. The 10,000 black locust trees available were ordered twice over. About 30 plantations were established in various parts of the State with the 30,000 trees distributed.

Late figures for this spring's forest-tree distribution by the State forestry organizations of Pennsylvania and New York are: Pennsylvania, 14,229,514; New York, 21,564,175.

Education and Extension

Loan Fund for Minnesota Forestry Students

A fund of \$4,000 from which loans may be made to worthy and needy students of forestry has been given to the University of Minnesota by Mrs. Emily Speechley Whitacre, of St. Paul. The gift is to be known as the Mary Dwight Akers loan fund, in honor of the chairman of the outdoor life committee of the fourth district, Minnesota Federation of Women's Clubs.

Oregon Degree Course in Lumber Manufacture

A degree course in lumber manufacture is being introduced this year by the Forest School of the Oregon State College, in response to local demand. With basic work similar to that in the technical forestry and logging engineering courses, the new course will place special emphasis on wood technology, lumber grading, kiln drying, sawmill construction, and lumber salesmanship.

Short Timberland Management Course at Wisconsin

A new short course in timberland management is offered this fall by the department of agricultural engineering, College of Agriculture, University of Wisconsin. Raphael Zon, director of the Lake States Forest Experiment Station, and F. G. Wilson of the college staff, are in charge, assisted by R. D. Garver and Arthur Koehler of the Forest Products Laboratory, State Forester C. L. Harrington, and District Forest Inspector C. A. Hoar. The course, scheduled for October 31-November 18, was offered free of charge, with the attendance limited to 20 men. It was planned to begin with an analysis of present forest management practice and to give most of the time to selective logging and improvement of the stand, to touch on the growth habits and requirements of the most important trees of the region, and to give the fundamentals of forest fire protection and of land surveying and mapping. Visits were to be made to an organized fire protection district of Wisconsin, the State forest nursery, and old pine plantations, and the last week was to be spent in camp studying selective logging operations.



Trees planted by Camp Fire Girls this year, according to reports received at national headquarters by September, numbered at least 70,000.

Washington State College Enlarges Clarke-McNary Nursery

The forest nursery of Washington State College has recently been enlarged from 10 to 21 acres. "Practically all the stock distributed for planting in Washington," writes Asst. Prof. Charles M. Genaux, "must be large transplants with well-developed root systems, capable of surviving on more or less adverse sites. This is especially true for eastern and central Washington, where the annual rainfall seldom exceeds 20 inches and often falls to 10, with most of the precipitation coming during the winter months. A considerably larger area must be kept in tree production than would be the case if the planting stock could be shipped as two or three year seedlings."

Improvements to this nursery this year include a packing and storage shed and 1,500 feet of additional water-pipe line. Open-ditch irrigation was successfully used this summer to water coniferous and hardwood transplants and hardwood seedlings.

Mississippi Prize Poster Contest

A poster contest in which \$160 is offered in prizes has been announced by the Mississippi Forestry Commission. First and second prizes of \$25 and \$15 will be awarded to the winners in each of four classes—college students, high-school students, grade pupils, and the general public. Either forestry or other conservation subjects may be used. The contest closes December 1 and the awards will be announced on December 9, Mississippi's winter Arbor Day.

Farm Bureau Forestry Tours in California

California farm bureau officials have turned the lure of the tour to good account, taking farmers on "personally conducted" tours to see the good and the bad in forest-land management. In February of this year farmers of Los Angeles County were taken to see a forest nursery, a forest plantation, fire lines, and a fire protection district. In June farm people of Santa Cruz County were conducted through second-growth redwood, a recent burn, and a piece of newly cut-over land, visited a lookout station, and heard talks on reforestation, forest protection, and forest research.

The first trip attracted 100 "tourists" and the second 125. A third is planned by the Orange County Farm Bureau for November.

Summer Camp Work Now Required at Colorado College

The forestry department of the Colorado Agricultural College this year has a freshman class of 50. Its total enrollment is 113, or about 13 per cent more than in any previous year. Beginning with this year's entering class 11 weeks' attendance at summer camp, heretofore optional, will be required of all candidates for the bachelor's degree in forestry. The forestry camp, located 50 miles west of Fort Collins with 800 acres of college-owned forest land in the vicinity, now has a good motor road to its front door, a new bunkhouse, and an electric-light system.

The majority of the upper-class men in the department are specializing in range management.

Pennsylvania School Children Report White Pine Blister Rust

Pennsylvania school children are taking part in a State-wide search for white pine blister rust on currants and gooseberries. Instructions, with colored pictures showing infected gooseberry and currant leaves, and report forms to be mailed with sample leaves from suspected plants, were distributed by the State bureau of plant industry in September to more than 14,000 school teachers. Within that month the children found rust on cultivated Ribes in at least eight counties from which it had not before been reported.

California Four-H Camp in Use

The Four-H Club camp in Whitaker's Forest, Tulare County, Calif., plans for which were described in the Forest Worker of May, 1927, went into use on June 13. The cost of developing the camp, which amounted to \$2,185, was shared by the farm bureaus of Fresno, Kings, Madera, Kern, and Tulare Counties and the Agricultural Extension Service. Most of the labor was contributed. E. G. Dudley saw to the scheduling of the volunteer labor; Earl Wortman, operator of a neighboring sawmill, furnished the lumber on generous terms; and Carl Pennebaker, a contractor of Exeter, gave two days' work of four carpenters.

Features of the camp are a 16 by 36 foot cabin surrounded with a rustic porch, a hotel cooking range, a dining platform accommodating 125, an 80-gallon hot-water tank, and a swimming pool surrounded by sequoias.

During the summer the camp was visited by more than 400 children.



Forestry exhibits of the Alabama Commission of Forestry were scheduled to be shown this fall at 12 fairs in different parts of the State, the series concluding with the State fair at Montgomery, November 7-13.

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Forest Study Begins with First Grade in Ida Grove, Iowa

Even first-grade children are studying trees in Ida Grove, Iowa. Miss Grace Jones of the Ida Grove schools last year devised a program of tree study for primary pupils that included lessons for fall, winter, and the spring planting season, visits to the woods, and the preparation of a window exhibit for American Forest Week. The children made tree books with pressed leaves and kodak pictures, identified local species by shape and bark, heard something about the uses of certain kinds of wood, and learned what kinds of trees are desirable for street and lawn planting in their town. With the tree lessons were correlated lessons in music and art appreciation. In the American Forest Week exhibit which the children helped their teacher to prepare, twigs of different trees were arranged together with charts showing the leaf, bark, seed, and bud of each, samples of the wood, and kodak pictures of the trees. In the background were reproductions of paintings by Corot.



On the demonstration forest presented some 20 months ago by Charles Lathrop Pack to the College of Forestry of the University of Washington, the college has now established a small nursery, a miniature forest showing how a Douglas fir forest on a 60-year rotation is handled, a model camp, and five experimental plots planted to different species of trees. A system of signs calls the attention of the passer-by to the forest and explanatory signs accompany all the exhibits. Professor Kirkland had a crew of from 10 to 12 men at work all summer building roads and trails, and as soon as the tract is properly opened up it is planned to start experiments in thinning and utilization. During the summer the forest had several hundred visitors.



A three-day trip to the Lava Beds National Monument was the reward of the six school children of Modoc County, Calif., who won first place in fire-prevention essay contests for certain school grades during American Forest Week of this year. The six children winning second place were taken on a one-day trip to Happy Camp Lookout and Pit River Ranger Station. Eli Dale, veteran lookout man, explained to them how fires are detected and reported, how to read the wind gauge, and how to take humidity readings.



A hillside area only one-quarter mile from the town limits and plainly visible from the town square of Sayre, Pa., has been donated as a school forest by J. B. Knapp, a local florist. Under the direction of District Forester E. Fred Brouse, freshmen boys of the Sayre High School this spring planted on it 3,000 forest trees.

FOREST WORKER

The Mississippi Forest Service, with the cooperation of the State extension forester, is putting on exhibits this year at eight fairs in the State. The exhibits cover uses of certain native Mississippi woods, fire, influence of forests on run-off and erosion, and the contribution of the forests to the needs of everyday life. The fairs have been grouped in two circuits, for which duplicate exhibits have been prepared, the State supervisor of forestry education being in personal charge of one circuit and the extension forester of the other. One of the eight fairs is not included in either circuit but will have a special exhibit in charge of a local official.



School children of Central City, Somerset County, Pa., this spring celebrated Arbor Day by planting 70,000 trees on the watersheds of the vicinity. Added to their plantings in the three preceding years, this brings the total to 259,000 trees.



Projects undertaken by members of the Louisiana reforestation clubs were successfully completed this year by 130 boys. The boys who got the best results were rewarded with prizes totaling \$742. Contributors to the prize fund included the Great Southern Lumber Co. and the Southern Pine Association.



Extension Forester Bode of Iowa has asked the children of the State to help find better varieties of the native nut trees for propagation. Prizes are offered for the best black walnuts, butternuts, shagbark and shellbark hickory nuts, pecans, and hazelnuts entered by children and young people between the ages of 11 and 19, in county and State contests.



Twenty-seven forestry students of the Iowa State College spent the past summer in forestry camp on the shore of Lake Au Train, Mich. In addition to woods work they had the opportunity of studying near-by logging operations and a large paper plant at the town of Munising. Visits were made to the large sawmill at Sault Ste. Marie and to Canadian as well as American paper plants. Profs. D. S. Jeffers and Perkins Coville were in charge.



More than 600 California boys and girls attending Four-H club camps this summer were led on forestry hikes by Extension Forester Woodbridge Metcalf.



The Forest School of the Louisiana State University reports the enrollment of 31 freshmen this year, as against 12 last year.

Forest Service Notes

An Experiment in Lodgepole Pine Utilization

By J. C. KIRCHER, United States Forest Service

The most important product obtained from the lodgepole pine stands of the national forests is railroad ties. Wherever stands are fairly accessible, timber of sizes suitable for hewn ties is in good demand. The trees best suited for hewn ties are those from 11 to 14 inches in diameter at breast height. Operators will accept for this purpose trees with diameters up to 16 inches or, occasionally, to 17 inches.

Good silviculture requires that when a large percentage of the tie-size trees is removed from a stand of lodgepole pine nearly all the larger trees and a number of the suppressed and defective smaller ones be cut also. Here is where the trouble comes in. In some of the national forest stands smaller trees can be marketed for use as mine props, mine ties, and cordwood, but ordinarily the market can by no means absorb the amount of small material that should come out at the same time with the ties; and for the trees too large for hewn ties there is usually little demand.

In national forest sales of the last few years, operators taking lodgepole pine for hewn ties have been required to take also most of the larger trees. Under this requirement it has become common for operators to bring small sawmills into the stands and saw the larger trees into ties. The problem of using the tremendous amount of small material from the sale areas, however, still remains largely unsolved. This small material includes tops up to 9 inches in diameter, as well as the great number of small trees from 4 to 11 inches in diameter that ought to come out if the stands are to be put into condition for accelerated growth.

The national forests in Colorado, and to some extent those of southern Wyoming, have developed markets for a good deal of this small material. Some such market exists also in eastern Montana. For the Wyoming forests of the Intermountain National Forest District, however, practically no such market exists.

Foresters of the intermountain district have for some time been experimenting in the use of lodgepole pine for fence posts, creosoting the posts in a few small home-made plants by the open-tank method. Their experiments have shown that this species makes

a smoother and better fence post than northwestern cedar, and if creosoted outlasts it. In order to develop a market for the fence post of lodgepole pine as a competitor with the cedar post, however, it was necessary to find an operator willing to experiment.

Such an operator has now been found, on the Targhee National Forest, in Wyoming. To start things, the district has given him the trees selected on a silvicultural basis for removal from an area of about 60 acres. The stand of the cutting area was about 100 years old, and the dominant trees averaged about 6 inches in diameter at breast height. Twenty-five carloads of material have been taken off the area. A few ties were cut, but the bulk of the product consisted of 10-foot stockyard posts, fence posts, and poles to a minimum diameter of 3 inches. The posts, after seasoning, will be creosoted by the open-tank method. Accurate operating costs are being kept, and, of course, selling prices will be recorded.

The area has been heavily thinned, and now contains an excellent stand of well-formed, long-crowned, dominant trees, so spaced that they should grow fast. It is one of the finest cut-over areas in the lodgepole pine region, and demonstrates the best of forestry practice. Sample plots have been laid out for the study of growth after cutting, so that even if the marketing of lodgepole pine fence posts on a large scale does not become a reality much useful information will be collected.

Since Wyoming, South Dakota, eastern Colorado, Nebraska, and Kansas consume very large quantities of fence posts, success in marketing lodgepole pine timber of the national forests in the shape of creosoted fence posts would open up a large field for better utilization and for better silviculture.

Erosion Study in Barranca Canyon, Calif.

In the Barranca Canyon, near San Bernardino, Calif., preparations are being made by the California Forest Experiment Station for a study of erosion. The canyon was burned over in 1925. The slopes and soils of the area are typical of those found in southern California, and before the fire there was a very dense cover of chaparral. A dam 75 feet wide and 20 feet high is being installed to form a settling basin to catch the eroded material from the denuded slopes, and stream flow will be measured at two points within the canyon. Meteorological equipment is being installed to get the effect of the various types of storms upon erosion and the recovery of the chaparral. In this project the Forest Service has the cooperation of the Geological Survey and the California division of forestry and a number of southern California agencies, including the Tri-county Forestation Committee, the cities of San Bernardino and Redlands, and the counties of Los Angeles, Santa Barbara, San Bernardino, and San Diego.

Growth of Planted Slash Pine

The Government's first experiment in transplanting slash pine was made only 11 years ago. In June, 1916, Extension Forester W. R. Mattoon made a trip over the property of the East Coast Lumber Co., near Watertown, Fla., with M. B. Wilder, the company's woods superintendent. Many vigorous young slash-pine seedlings in the midst of their first growing season were noticed near the company's camp, and it occurred to Mr. Mattoon to try transplanting some of them. Although the season was obviously unfavorable for such an effort, 50 of the trees, which at 6 months of age were about a foot tall, were dug up and sent by mail to Summerville, S. C. There they were planted at the branch experiment station which the Clemson Agricultural College maintains to test the agricultural development of poorly drained cut-over pine land on the coastal plain. Later in 1916 Mr. Wilder made a commercial collection of slash pine seed, and in the following spring some of this seed was used by the Forest Service, in cooperation with the college, in making at Summerville what is believed to have been the first experimental sowing of slash pine in the United States.

This senior plantation and sowing of slash pine developed very satisfactorily. When measured in the early spring of 1927 some of the 11-year-old planted trees were 9 inches in diameter at breast height and 30 feet tall. At the same time the trees grown from seed, on wet land, measured up to 7 inches in diameter and to 25 feet in height.

National Forest Roads and Trails

The national forests got 1,370 miles of new roads and 4,987 miles of new trails in the fiscal year 1927. Of the roads 292 miles are major highways and 1,078 minor roadways. The cost of all the new roads was \$7,713,535, of which \$925,879 came from local cooperative, State, and county funds and the rest from Federal funds. The cost of the trails was \$946,622. In addition, \$1,593,950 was expended during the year in maintaining roads and trails.

The new work brings the total of completed roads on the national forests on July 1, 1927, to 13,219 miles and the total of completed trails to 31,607 miles. For all construction and maintenance of roads and trails on the forests the Government has spent \$63,989,508 and local cooperators have contributed \$15,611,956.

The road system of the national forests now includes 39,448 miles, of which 15,994 miles are considered to meet satisfactory standard. The trail system totals 85,892 miles, of which 73,431 miles is considered satisfactory.

Proposed additions and improvements to complete the system of roads and trails and bring it up to standard would require the expenditure of \$177,124,616, according to present plans.

Zinc Sulphate for Weeding Seed Beds

By W. G. WAHLENBERG, United States Forest Service

At the Savenac Forest Nursery, in western Montana, hand weeding of seed beds has been largely displaced by a method of weed control that is much cheaper and that does not cause disturbance of the roots of tree seedlings. This has been made possible by the discovery that zinc sulphate solution of a certain strength kills the seed of most of the weeds that give trouble in the nursery but does not injure the seed of the principal conifers grown there.

In 1915, in the course of experiments with sulphuric acid as a disinfectant against damping-off fungi, it was observed that the application of the acid to plots of soil reduced weed growth. Hand weeding was an expensive item at Savenac, where 3,000,000 coniferous seedlings and transplants were being produced annually, and since the seedlings were grown in stands often as close as 100 individuals per square foot there seemed to be no hope of finding a way to weed them by mechanical means. The possibility that help might be found through chemical treatment was therefore followed up with experiments covering a period of 10 years, which led to the development of a simple method that combats weed growth by preventing the germination of weed seeds.

The treatment consists in applying to every square foot of seed-bed area 8 grams of zinc sulphate dissolved in 250 c. c. of water. This means $1\frac{1}{8}$ ounces of zinc sulphate in a quart of water on each 4 square feet of seed bed. The application is made immediately after the seed are sown.

The weeds most troublesome in the nursery were species of sorrel, timothy, and clover. The three tree species that formed the bulk of the nursery's annual output, and with which the chemical treatment was thoroughly tested, were western white pine, western yellow pine, and Engelmann spruce.

Results varied a little from year to year, but each trial effected a reduction of from 80 to 100 per cent in the number of weeds present in the seed beds for two seasons following the application. The treatment did not kill advance growth of weeds, nor pieces of roots or underground stems left from hand pulling, but it did prevent the germination of most of the weed seed. The seed appeared to be killed just after breaking their seed coats in an attempt to germinate. The treatment seemed to be especially fatal to clover seed, and effective on most of the other native weed seed. In general the grasses were observed to be least affected.

The zinc sulphate treatment tended slightly to hasten the germination of pine seed and increase the number of individuals sprouting. Careful comparisons of the behavior of stock from treated and untreated soil during the various steps in nursery culture and for the first three years after field planting did not show that the treatment was in any way detrimental to the

development and survival of western white or western yellow pine stock. It did not hinder germination of Engelmann spruce and Douglas fir. Apparently it did reduce the germination of western red cedar, probably because the seed coats of this species are so thin.

In using this treatment care must be exercised to bring about an even distribution of the chemical. The Savenac experiments indicated that the application of as much as 10 grams instead of 8 to the square foot injures about 7 per cent of the growing root tips of the trees, and that an increase of the over-dosage steadily increases the injury.

At the Savenac nursery the zinc sulphate did not prevent the use of field peas as a green fertilizer crop—apparently because much of the original dose of zinc sulphate had been leached out of the soil before the pea seed were sown. In fact, in the case of peas grown on treated soil nodule development, and hence nitrogen fixation, were markedly stimulated.

Most of the trials of this method of weeding at the Savenac nursery were on the native soil in its natural state. The nursery soil had good physical properties, granular structure, and highly oxidized soil minerals. There was a fair amount of organic matter, but much of it was not well decomposed, or the "humified" organic material may have been a little lower than usual. There was no lime in the form of carbonate. When tests were made on flats of pure sand in the greenhouse a loss of effect on the weed seed was noted, and on nursery plots freshly fertilized with dried blood and ground bone or with sheep manure the treatment was 17 to 18 per cent less effective. On sand the lowering of efficiency was probably due to too rapid leaching. On the fertilized soil the cause seemed to be associated with the greater abundance of organic matter, but the slight loss of efficiency was reduced by plowing or otherwise working the fertilizers deeply into the root zone of the soil.

A disturbance of the soil such as that produced by pulling trees for planting seemed to make it possible for weeds to start growing on the treated areas. Tests made at the Forest Products Laboratory two years after the treatment showed small quantities of insoluble zinc in treated soil and in the ashes of trees grown on it, but revealed no traces of soluble zinc remaining in the soil. Thus it appeared that a new application of the zinc sulphate was needed every second year.

It was necessary to keep in mind the possibility of damage to the soil from the cumulative effects of repeated applications of the zinc sulphate. At the Savenac nursery, where the soil seemed to be naturally acid, soil acidity was not noticeably greater in the treated than in the untreated areas, but the natural reaction of the soil made it necessary to apply lime. Independently of its neutralizing action on acids, lime is said to inhibit the toxic action of zinc on plants. It was tentatively decided that when a second treat-

ment was needed on a given area only 4 grams of zinc sulphate per square foot, or half the amount originally used, would be applied.

Few attempts were made at Savenac to apply the treatment to transplant beds. Because of the wider spacing of the trees, the cultivation of the soil, and the different method of irrigation, it may not be found practical for transplants. From the seed beds alone, however, there was reported an annual saving in labor costs of about \$353, or 32 cents per bed of 48 square feet. In addition to this a considerable saving was of course effected through eliminating the mechanical damage to seedlings that inevitably results from hand weeding.

Tests on Extinguishers for Spot Slash Fires

A double-action back-pack pump with 5 gallons capacity is the best equipment for putting out spot fires in slash. It can be run for about 20 minutes without refilling and is effective in putting out large spot fires that develop intense heat.

This conclusion is the result of tests with six kinds of fire extinguishers, all chemical except the back-pack pump, conducted by E. I. Kotok on the Stanislaus National Forest this summer. None of the chemical extinguishers tried had more than a 1-minute run of material. As the extinguishers are effective only on fires that can be completely immersed in that short time, they are useful only on very small fires.

For all-around use on a tractor the "fire gun" was found most suitable, one of the chief reasons being its effectiveness in putting out gasoline fires. Other extinguishers were more effective on the slash fires but were found not suitable for tractor attachment. The tests were made on fires 9 to 20 square feet in size set in a windrow of unpiled sugar pine-white fir slash and a standard Forest Service slash pile.

Reproduction on a Kaniksu Burn

More than half a million seedlings per acre are growing on a sample plot in a 60,000-acre area of the Kaniksu National Forest that was burned over in the summer of 1926. Men of the Northern Rocky Mountain Forest Experiment Station who examined 62 milacre quadrats of the area, known as the Granite Creek burn, found seedlings of seven species present in the following numbers, per acre:

White pine	11, 500
Larch	11, 000
Engelmann spruce	10, 000
White fir	6, 000
Douglas fir	500
Red cedar	329, 000
Hemlock	207, 000
Total	575, 000

Game in the Southern Appalachians

By E. H. FROTHINGHAM, United States Forest Service

A new game preserve of 20,000 acres has been established by the State of North Carolina on Federal land at the head of South Toe River, on the slopes of Mount Mitchell. Other preserves on private as well as Federal lands are being talked of. The remoteness of the mountains, which makes them ideal game coverts, is a remoteness that attracts the nature lover and the hunter, and the establishment of preserves is a wise move in anticipation of increases in the drain on wild life.

This fall, however, wild life has been decidedly on the increase in the Southern Appalachians. Investigative bears have visited the Bent Creek laboratory of the Appalachian Forest Experiment Station. On the Pisgah Game Preserve there has been an increase in the deer population. An excellent motion picture of deer, elk, buffalo, and other creatures of the open spaces was taken without much difficulty on the Pisgah preserve by Supervisor Mattoon and the Asheville Chamber of Commerce. Squirrels, turkeys, and wild rabbits are abundant.

It seems likely that this increase in wild life is connected with improvements in forest fire control, and the two are being thus related in the public mind. Forest fires destroy young animals, eggs, and fledglings. The sporting touch looks like a gateway to the sentiment for forest protection down here.

In this respect game is an asset to forestry, but some forms of wild life are a liability because of depredations on seed, seedlings, and young trees. Forest nurseries in the woods, seed spots, and stored seed at the Bent Creek laboratory have recently fallen easy prey to rodents.

Recent forestry meetings have given special attention to the problems of game and the wild life of the woods. The North Carolina Forestry Association devoted a session to the subject, and advocated the study of the life habits of game and other wild life as a basis for their management in the forests. The Appalachian Forest Research Council, at its meeting in October, recommended that a specialist from the Biological Survey be assigned to the Appalachian region to work in cooperation with the forestry agencies "on problems relating to game and other wild life, as a part of the comprehensive management of the forests."



Eighteen radio talks on forestry are scheduled to be broadcast between October 31 and April 27 as a part of the Department of Agriculture's program. Ninety broadcasting stations, representing all parts of the country, have been signed up to use some or all of these talks.

FOREST WORKER

Smokers' Code

By JOHN D. GUTHRIE, United States Forest Service

The number of forest fires recorded as caused by smokers has in general increased steadily since 1922, the year when the Forest Service began to classify fires under this cause. We are not here concerned with the possibility that much of the evidence against the smoker may be circumstantial or that the number of people who smoke may have increased tremendously since the war. Nor are we concerned with the question whether the match or the cigarette, the pipe or the cigar, has been more to blame, or whether the guilty "fag" is a tailor-made one or not, but solely with an effort to prevent the causing of fires by smokers.

In view of the menace of smokers' fires, the question of a smoker's code was fully discussed at the forest supervisor meetings in the North Pacific National Forest District this spring; advice and suggestions were requested from the State foresters and fire associations in both Oregon and Washington; and finally a code was evolved. The district office sent copies of this code to the 700 Oregon and Washington newspaper editors. The point was emphasized to the editors that unless a larger percentage of the public was careful about smoking in the forests continued closing of forests would result. Copies of the code also went to the State hotel men's associations, State motor associations, all city offices in Portland, sportsmen's associations, six transcontinental railroads, cigar, sporting goods, and hardware stores, and other agencies. Fourteen broadcasters in the district agreed to put the code on the air. The newspapers ran the code and many had editorials on it; the Oregon State editorial association passed resolutions on it; each of the six railroads distributed it in their smoking cars or diners; and stores displayed it in their windows. Three portable folding exhibit panels playing up the code were circulated.

A total of 3,000 signs, 14 by 22 inches, and 20,000 cards, 3½ by 5½ inches, were printed by the Western Forestry and Conservation Association and distributed by this association and by State foresters, fire associations, and the Forest Service.

The smokers' code is:

FOR THE DRY SEASON

DANGEROUS TO SMOKE—

WHILE TRAVELING—

On forest, brush, or grass land.

SMOKE ONLY—

1. While stopping in a safe place clear of all inflammable material, or
2. During or right after a heavy rain, or
3. Inside a vehicle on two-way highways, or
4. Above timber line

AFTER SMOKING—

Put out all lighted material.

Pennsylvania Virgin White Pine and Hemlock Area Offered to the Government

One of the few remaining stands of virgin white pine and hemlock timber in the Eastern States is the Hearts Content Forest, in Warren County, Pa. This timber is being cut. Wishing to see a part of the stand preserved in its wilderness beauty, the owner, the Wheeler & Dusenberry Lumber Co., has offered to give 20 acres of it to the Government. The gift area represents some of the best mixtures of pine and hemlock that dominated the virgin forests of Pennsylvania and for two centuries upheld the appropriateness of the term "Penn's Woods." It lies within the boundaries of the Allegheny National Forest and will be made a part of that forest. As nearly as possible it will be kept intact from outside influences, enabling foresters to study the cyclic changes that take place naturally in a virgin stand of white pine and hemlock.



Government Gets Option on Waterville Area

An option on the entire Waterville Valley in the White Mountains of New Hampshire has been obtained by the Federal Government. The option covers more than 22,500 acres, including the Mad River Notch and the Greeley Ponds. The provisions of the option will permit a large portion of the old and mature timber to be cut and taken out by water in such a manner as to protect the ponds, the notch, and other scenic areas. They also include protection of the lands that are cut over, the leaving of adequate seed trees, and the withholding of a large area of young growth until mature. If the purchase of the land at the price and under the conditions specified in the option is approved by the National Forest Reservation Commission, Congress will be asked to make a special appropriation for the purpose. If the purchase is completed, the area will become a part of the White Mountain National Forest.



The Ocala division of the Florida National Forest has been segregated, by Presidential proclamation, as the Ocala National Forest. The new administrative unit thus created has a gross area of 252,000 acres, of which 158,622 acres is Federal property.



The herbarium of the Forest Service, in Washington, now includes nearly 60,000 range plants, representing about 6,000 distinct species. In the 20 years since the herbarium was begun, contributions have been made to it by approximately 1,000 collectors.

General Forest News

Dying Oaks in the Southern Appalachians

By R. E. BALCH, United States Bureau of Entomology

Throughout the Southern Appalachians a great number of dying oaks have been noticed by foresters during the past two years, particularly in 1927. Something similar took place in the same region in 1914-1916. Between July 1 and September 30 the leaves on these oaks, or on several of their main branches, suddenly withered. Trees so affected usually died during the following summer.

No individual insect or disease can be held responsible for this death wave, so far as I have been able to discover by examining a number of the oaks. The cause seems rather to have been a combination of adverse circumstances. In almost all the cases observed the oaks were individuals of slow or very moderate growth suffering a loss of vitality from over-maturity or competition. The exceptional drought of 1925 caused many oaks to shed all their foliage in mid-summer, and the late frosts at the end of April, 1927, completely killed the new foliage. The unfavorable climatic conditions made the less vigorous trees subject to attack, and at least three insects and one fungus seem to have had a part in the undoing of these trees.

The results of my observations, carried out in August and September, 1927, are as follows:

All the dying oaks noted were of the black, red, or scarlet species. White oaks, though commonly adjacent, were in no case found dying. The majority of the dying oaks were from 80 to 110 years old. Practically all were dominant mature trees 10 to 24 inches in diameter and 55 to 65 feet in height. A few, however, were intermediate, some only 5 or 6 inches in diameter. All the trees had made rather poor growth for 10 years.

On most of the trees branches had died in previous years. A good many of the trees appeared to have died in sections, from the top down. In some of them the top of the crown was leafless and the middle section bore brown foliage, only the foliage of the lower branches remaining green.

A good many had rot both in the top and at the base of the trunk. This was often associated with the work of *Prionoxystus robiniae*, which had done a good deal of damage sometimes at the base and sometimes in the larger branches and upper trunk. There were indications that the older trees had been attacked for a number of years by *Prionoxystus*, with which near-by living oaks were often severely infested. The roots frequently showed mycelium of the *Armillaria* fungus and the work of a borer *Prionus*. All the trees showed various degrees of infestation with *Agrilus bilineatus*.

In 1914 W. H. Long investigated the death of chestnut and oak in Chenango County, N. Y., and Brim County, N. C., and found the root fungus (*Armillaria mellea*) present in 130 of 477 oaks examined. These dying trees were of all diameters from 2 to 18 inches. Mr. Long believed that under certain conditions the fungus was a primary cause of death, and mentioned as contributing causes two late frosts in 1913.

In 1916 F. C. Craighead, investigating dying oaks in the Southern Appalachians, found the *Armillaria* fungus and a *Prionus* larva present in the roots as well as *Agrilus* in the trunk, although in some dying trees he found no sign of insect attack. He attributed death not to any certain insect or disease but rather to a combination of factors, some purely physiological.

In 1915 R. N. Chapman gave an account of the killing of oak in Minnesota where many areas of several acres each had been devastated. *Agrilus bilineatus* was always present. The insect seemed to prefer weakened trees but in some instances had attacked trees showing no recognized sign of low vitality. White oaks seemed less susceptible than red or black oaks. *Armillaria* was usually though not always present and seemed in many cases to have been the cause of weakening. Mr. Chapman thought that the fungus might sometimes have been the primary cause of death. However, he observed some dead trees, girdled by *Agrilus*, that showed no evidence of the fungus. Sometimes the "dead" trees sprouted from the roots, a fact suggesting that the trouble was above ground.

In 1926 J. A. Beal examined oaks dying in Bland County, Va., and found no insects that were likely to have caused death. These trees were mainly large and overmature. Mr. Beal believed that the late frosts of May 26 and 27, 1925, were chiefly responsible for the condition. In this case the dead trees included a large proportion of white oaks, probably because these were in a more succulent condition at the time of the frost than the other species.

Probably there is no definite primary cause of this periodic heightening of mortality among oaks, unless it be drought or a combination of drought and late frosts. It seems clear that unfavorable climatic conditions make the less vigorous oaks in the forest susceptible to attack by *Armillaria*, *Prionus*, or *Agrilus*. Perhaps any one of these, or any combination of them, may be the final cause of death.

Apparently no control can be suggested other than a system of management that will remove all unhealthy trees and maintain the vigor of the stand.

A County Assessor Lists Fire Losses

By E. I. KOTOK, United States Forest Service

Losses in assessments sustained by Siskiyou County, Calif., in 1926 through forest fires are given considerable space in the annual report of County Assessor R. R. Smith, in which are listed three fires that reduced the county's assessed valuation by \$125,615. These three fires burned over 4,729 acres belonging to the Pickering Land & Timber Co., 10 sections of Algoma Lumber Co. lands, and 23 sections owned by the Central Pacific Railway Co. The editor of a county newspaper, in commenting on the report, points out that in addition to the \$125,615 loss in assessed valuation, there was a loss of something like \$2,000,000 in wages and manufactured products that would have been obtained from the burned stumpage. Also the \$50,000 spent in suppressing the fires could have been used to greater advantage for schools and roads.

Coal Company Makes Good Showing in Forest Fire Protection

The Pennsylvania Coal Co., owning about 20,000 acres of second-growth hardwood lands in northeastern Pennsylvania, employs nine crews of six men each to protect its lands from fire. While not on fire duty the men carry on improvement cuttings and thinnings. Five years' progress in economical fire protection is shown by the following figures, compiled from detailed records of fires on the company's lands within that period:

Year	Number of fires	Total cost of fire protection	Average cost of protection per acre	Per cent of total area burned
1922.....	45	\$317.78	\$0.02	6
1923.....	52	228.13	.01 $\frac{1}{2}$	10
1924.....	15	237.62	.01 $\frac{1}{2}$	3 $\frac{1}{2}$
1925.....	16	451.14	.03	4
1926.....	18	108.54	.007	2



A reforestation conference of Wisconsin and Michigan lumbermen was held in Green Bay, Wis., on August 23 at the call of the Northern Hemlock and Hardwood Manufacturers Association. The members of the newly created State conservation commission were present. Forestry practices were explained to a gathering of 120 by Raphael Zon, Carl Stevens, George Banzhaf, and Marcus Schaff. It was announced that the Goodman Lumber Co. will practice selective cutting after January 1, 1928, and that the Kimberly-Clark Paper Co. and other large concerns represented in the conference will investigate the possibilities of such practice for their lands.

Paper Company Encourages Farm Forestry

F. M. Brown, general manager of the Halifax Paper Corporation, Roanoke Rapids, N. C., is making better timber growers of the farmers from whom he buys lumber. He advises them to select trees for cutting in such a way that they may market some pulpwood every year and make their timber a perpetual crop. To induce the farmers to do their wood cutting at seasons when other farm work is not pressing, he stops buying wood at the beginning of the plowing season, and except for a short period in the early summer does not begin again until after harvest. In these efforts to encourage good farm forestry practices he has the vigorous cooperation of both County Agent W. O. Davis and Extension Forester R. W. Graeber. Looking forward to a long term of dealing with the neighboring farmers, during the depression brought on by the overproduction of cotton in 1926 Mr. Brown continued to pay \$6 a cord for pulpwood, though he could have gotten it for \$4. "We are not in the paper mill business as philanthropists," he explains. "We want to deal with the farmers so as to continue the paper business for a hundred years and never strip the country. I am following only what I think is horse sense."

Profitable Fire Protection

A fire-protection force was organized by the Great Southern Lumber Co. last year, for the first time, to guard its property of 80,000 acres in Mississippi. A few men were engaged solely for fire protection work, and all the company's employees were made subject to call in case of need. The time spent by the latter in fighting fires was charged to "fire suppression." In the year ending April 1, 1927, this protection service cost \$3,604, or 4 $\frac{1}{2}$ cents per acre. In that 12-month period 1,398 fires originated from the company's logging operations on its Mississippi land; but the spread of these fires was held to 402 acres—less than one-third acre each. Only 14 of the fires burned more than 10 acres, and 1,255 burned less than one-quarter acre each.

The net expense of the protection which the new system gave to the company's young timber seems to have been less than nothing, for the amount spent on protection did not equal the damages paid by the company in the preceding year to owners of adjoining lands to which its fires spread, plus the loss it sustained in that year through the burning of logs piled along the railroad right of way. At the same time the company realized a gain in the good will of its neighbors.



Army purchasing agents are now being instructed to purchase short-length and end-matched lumber in all cases in which the use of such stock is practicable, Assistant Secretary MacNider has announced.

Building Conference Adopts Code to Prevent Termite Damage

The Pacific Coast Building Officials Conference, meeting on October 18 at Phoenix, Ariz., adopted a set of rules suggested by the Department of Agriculture for the prevention of damage to buildings by termites, making these rules a chapter in its uniform building code. The rules adopted make specific requirements in regard to the preservative treatment of wood that is to be placed in contact with or near the earth, the use of Portland cement mortar for laying and capping masonry foundations, and the provision of metal termite shields around the surfaces of foundations. The suggestions that led to this action were brought before the conference by Thomas E. Snyder, Bureau of Entomology; George M. Hunt, Forest Products Laboratory; and Reginald H. Colley, Bureau of Plant Industry.

Old Field Returns Good Profit in Timber

A 2½-acre field on a farm near Howison, Miss., abandoned as a field-crop area 50 years ago, has recently yielded a timber crop worth \$600. The timber was longleaf pine with which the field had been reseeded naturally and which had been given no attention except for some protection against fire. About 1,000 trees were cut, and nearly every one of them made two poles. The return to the owner, Joseph Miller, was nearly \$5 per acre for each year of the pine-growing period. According to the estimate of W. R. Mattoon, extension forester of the United States Forest Service, it might have been nearly \$10 per acre if the farmer had done his own cutting, used his own team for hauling, and sold the crop at the railroad by the linear foot. That is the method he used in marketing the cotton he delivered at the gin or the potatoes he sacked and hauled to the railroad.



Porcupines of the southwestern national forests have betrayed themselves as followers of the beaten track, and Federal biologists are plotting against them much more hopefully than in the past. E. E. Horn, of the Bureau of Biological Survey, has observed that in their migrations between the lowlands and the mountain peaks these animals follow rather definite routes one season after another. The path of migration, it appears, is usually about a mile wide. Examination of trees baited by Mr. Horn with salt and strychnine revealed one or more dead porcupines under more than half of the baited trees.

Infestation with porcupines has become serious on portions of the Tusayan, Coconino, Carson, and San Juan National Forests.

Use of Local Supplies Saves Costs and Timber

Each of the seven timber-treating plants operated by the American Forest Products Co. throughout the eastern part of the United States draws its supplies of poles, as fully as possible, from the territory immediately surrounding it. For example, the large plant at Yarmouth Junction, Me., treats only eastern white cedar poles, most of which come from eastern Canada and northern Maine. W. F. Bancker, president of the company, besides practicing this policy, is calling the attention of other wood-treating agencies to the extravagance of bringing timber supplies from afar when local supplies are available. He points out to them, also, that besides effecting business economies his plan works against the waste of forest resources, by reducing the cost of cutting and handling, permitting better utilization of by-products, and bringing about better regulation of production within each timber-producing zone.



"Everybody helped" this spring when the fourth district, Minnesota Federation of Women's Clubs, started a community forest on Lake Keller, just north of St. Paul. The Ramsey County commissioners provided the land; the Cloquet Forest Experiment Station furnished the trees; forestry students of the University of Minnesota did the planting; and the St. Paul Pioneer Press and Dispatch, besides giving generous publicity to the undertaking, served refreshments to the planting crew.



The three-year period from January, 1924, to January, 1927, saw 30 lumber mills cut out in Louisiana, Texas, and Arkansas, according to the Gulf Coast Lumberman. The count was: Louisiana, 18; Texas, 10; and Arkansas, 2. The total daily capacity of the 30 mills was reported as 3,950,000 board feet.



A walnut tree growing on the farm of G. W. Gerwig, in Braxton County, W. Va., in the 10 years since it began to bear has produced \$150 worth of nuts. Mr. Gerwig recalls that when he started farming for himself, 37 years ago, this tree was bent almost to the ground by the weight of a small pig hung on it at butchering time. To-day it has a diameter of more than 2 feet.



The reopening of the case in which the Federal Trade Commission ruled against the use in trade of the term "Philippine mahogany" resulted in the board's sustaining its original findings.



More than 1,000,000 linear feet of pine piling was used in closing the Caernarvon gap in the levee below New Orleans.

Foreign Notes

Forests, Snow, and Floods in Belgium

(From a report of the special commission of the superior forest council, published in the Bulletin of the Central Forestry Society of Belgium.)

The influence of the forest is especially manifest and important at the time of the melting of the snows. The big floods have always occurred in winter (for example, that of 1880 occurred in December and that of 1925-26 in December and January), at the moment when the summits of our highest hills and plateaus were covered with an abundance of snow. It is the sudden melting of a great quantity of snow that generally is the determining factor in floods, and this sudden melting takes place on areas without vegetative cover when the temperature rises or when a hard rain, however short in duration, occurs.

Under the cover of the forest the sun and the rain do not fall directly on the snow, especially in coniferous forests which retain their foliage during the winter. The temperature remains lower and rises less quickly. The rain does not fall directly nor so abundantly on the ground. And the snow melts slowly. It is not unusual to see snow in a thick layer in the forest some weeks after it has disappeared from the neighboring open country.

A special condition exists in Belgium. On our high plateaus there are marshy spots that have been denuded on too large a scale. Often at the beginning of winter these marshy areas are covered with water as a result of the fall rains. When a freeze comes ice covers the whole surface. If snow falls it accumulates on this smooth surface, which greatly facilitates the flow of water when rapid melting takes place. One then sees extremely sudden floods in the streamlets that rise in the marsh country, while in the neighboring forest, often composed of spruce stands, nothing of the kind takes place. It may be added that the most rain and the most snow fall at the highest elevations.

Influence of Snow on Run-off

Snow in the high mountains has the power of holding back 65.5 per cent of its own volume in rain water or melted-snow water before allowing the water to flow. This property of snow is a powerful factor in influencing run-off; the heavier the snowfall in winter the later the flood period in the spring. This conclusion is the result of a study of conditions in the valley of the Viège de Saas by a Swiss engineer, O. Lütschg, and is reported in a recent publication entitled "Ueber Niederschlag und Abfluss in Hochgebirge."

French Societies Celebrate Tree Day on November 11

The National Wood Industries Association and the Society of the Friends of the Trees, with the concurrence of the Minister of Public Instruction, have fixed on Armistice Day as the date of an annual tree-planting festival in France. The societies have suggested that each commune fix upon some forestry activity that it can at least begin on that day—planting a few trees on the roadsides or on communal land, establishing forest tree nurseries in the schools, or reforesting denuded and unproductive areas.

In outlining the plan the officials of the two societies write:

"We believe that if, in a great many communes in France, the 11th of November were marked by a ceremony in the course of which the school children planted a few memorial trees * * * it would show through a clear and striking symbolism the desire of the young people to continue the work of preceding generations, their wish to enrich and beautify the land which their fathers fought to protect, and their constant faith in the future of our nation."

Portugal's New Law

By a decree of May 20 (1927) it is forbidden to reduce the area of Portuguese forests unless a manifest advantage is to be gained by changing from forest culture to agriculture or by replacing one species with another. Clearings of certain species must be replanted within two years. No cutting can be done without a previous declaration of intention. By this law it is also forbidden to remove cork from trees of less than 9 years' growth. Buyers of cork trees must declare to the department of forests and waters all the purchases which they have made of cork trees and where the trees are, when the cutting is to be made, or when the weighing will take place. Penalties of 25 to 50 per cent of the value of the material are provided for failing to comply with the law.

It is forbidden to destroy, without authorization, trees bordering streams which serve to fix the soil and protect it against erosion.

The French rosin trade has officially adopted the color value and nomenclature of the United States rosin standards from B to WW, inclusive. The United States standard for X, the highest grade recognized in the American trade, apparently did not suit the needs of the French trade, which has a larger market for extra pale rosins.

State Forests and Forest Nurseries in Palestine

In 1926 Palestine had 120 State forests, with an aggregate area of about half a million acres, and maintained 14 forest nurseries. From the Government nurseries 245,000 trees were furnished to Government plantations and 32,000 to public organizations and schools, and 84,000 were sold. Nurseries were maintained at Acre and Jebalia to produce plants for sand fixation. The objects of Government afforestation work were planting of waste lands, reclamation of sand dunes, and improvement of forest reserves.

Australian Forestry School

The Australian Forestry School, which was opened at Canberra on April 11, 1927, began its work with students enrolled from every State in the Commonwealth and with a staff of three lecturers. The principal is C. E. Lane-Poole, inspector-general of forests, and the faculty is made up of C. E. Carter, M. F., Yale; H. R. Gray, Dip. For., Oxford; A. Rule, M. A., B. Sc., Aberdeen University; and G. W. Nunn, surveyor.

The school building is in itself a demonstration of the utilization of native woods. It is "constructed from floor to rafters with Australian woods, paneled and furnished with Australian woods." It contains lecture rooms, a museum, library, laboratory, drafting room, and offices and service rooms. An arboretum and forest nursery and plantations provide excellent facilities for field study. Arrangements have been made for the study of forest management and the preparation of management plans through cooperation with the chief forester of the Federal Capital Commission, and preliminary work has already started on a near-by forest of Eucalyptus.

Two years of university work are required for entrance to the forestry school.

Australians Plan Paper Making from Eucalyptus

Australians have watched with interest the experiments of the United States Forest Products Laboratory leading to the development of a process by which newsprint paper can be produced from hardwoods, according to a writer quoted in the Australian Forestry Journal. Early this summer the Tasmanian Parliament had already granted concessions over about 175,000 acres of land in southern Tasmania to the Tasmanian Paper Proprietary (Ltd.), and this company was constructing a mill near Geeveston for the manufacture of paper from Eucalyptus. Another company was being formed for the purpose of establishing a similar industry in northwestern Tasmania on a large area of Crown land, concessions over which had been granted to Gerald Musson, of Melbourne.

The French Believe in Fire Suppression

An incident suggesting the Frenchman's idea of the value of forests to the public is related by J. C. Nash, president of the Columbia Naval Stores Co. One hot day while Mr. Nash was traveling through the Landes district, in southeastern France, his train entered a woods where a fire was spreading rapidly and threatening considerable damage. The train was stopped at once, and the train crew and all the passengers alighted and fell to work fighting the flames. Only when the fire was out did the train proceed. So far as Mr. Nash learned, no one on the train had any money invested in the woods that were burning.

By Cable to the Lookout Platform

A British Columbia logging company, McCoy-Wilson (Ltd.), of Reed Bay, has put its fire lookout on top of a 160-foot Douglas fir and rigged up an ingenious device for getting the observer to his perch. An endless cable runs through a block at the top of the tree. Attached to the cable is a seat, and opposite the seat a counterweight just a few pounds lighter than the observer. A cable is stretched tight from the tree top to the ground and within reach of the observer, who pulls himself up by it. Coming down is a joy ride, for the man's slight advantage in weight takes him down automatically. The observer wears a heavy belt attached to a safety device which prevents sliding down unless a spring lever is held continually in the hand.

The lookout has a view of the company's entire timber holdings and of the logging operation. A telephone and a map divided into 10-acre squares provide means for giving quick and definite notice of fires. The lookout is supplemented by foot and speeder patrolmen.

Compulsory Fire Protection in France

Bois et Resineux, August 7, 1927, carries an account of a fire protection association formed at Cabanac, a commune south of Bordeaux, France. All the proprietors of the district are compelled by a French law ("the law of 1865") to take part. This law provides that if more than half the proprietors representing two-thirds of the area in the commune, or two-thirds of the proprietors representing half the area, form such an association all other proprietors are obligated to take part in providing pumps and other equipment and doing the necessary work.



The first paper mill in the Prairie Provinces of Canada has been established by the Manitoba Paper Co. at Pine Falls, Manitoba, on the south bank of the Winnipeg River, about 70 miles northeast of Winnipeg.

Personals

William S. Taber has been appointed State forester of Delaware. Mr. Taber is a graduate of the Pennsylvania State Forest School and was formerly a member of the Pennsylvania forestry organization.

Dr. H. B. Kummel, State geologist of New Jersey, has been reappointed director of the State's department of conservation and development. H. F. McConnell, of Upper Montclair, has been reelected president of the State board of conservation and development.

Clark C. Heritage has been placed in charge of the pulp and paper investigations of the Forest Products Laboratory, succeeding J. D. Rue. Mr. Heritage has had long experience in research and industrial work as a chemical engineer.

John S. Boyce is to succeed Samuel T. Dana as director of the Northeastern Forest Experiment Station, Amherst, Mass. Doctor Boyce returns to the United States Forest Service after a long period of specialization in forest pathology, during which he has come to be a recognized authority in that field. He has for eight years headed the Portland, Oreg., office of forest pathology, Bureau of Plant Industry. His publications include important studies on dry rot of incense cedar, decays and discolorations in airplane wood, and decay in Douglas fir in the Pacific Northwest. Until Doctor Boyce's transfer early in 1928, M. Westveld, associate silviculturist of the Northeastern Forest Experiment Station, will act as director.

Alvin G. Whitney is leaving his post as assistant director of the Roosevelt Wild Life Forest Experiment Station of the New York State College of Forestry to become professor of zoology at the School of Forestry and Conservation, University of Michigan.

Walter C. Lowdermilk, recently professor of forestry at the University of Nanking, China, in recognition of his erosion studies in the Orient has been made a fellow of the Royal Geographic Society. Mr. Lowdermilk spent the past summer making erosion and stream-flow studies with the California Forest Experiment Station, and is now registered at the University of California as a candidate for the Ph. D. degree in forestry. His thesis will deal with forest cover types as a factor in erosion.

W. D. Humiston has resigned as a member of the Idaho State Cooperative Board of Forestry, of which he was secretary and treasurer.

F. E. Garlough, of the division of economic investigations, Bureau of Biological Survey, who has been in charge of field eradication methods in California, has been assigned as assistant biologist to work in cooperation with the California Forest Experiment Station.

Phillips A. Hayward has resigned as instructor in wood utilization, New York State College of Forestry, to join the staff of the National Committee on Wood Utilization.

Arthur T. Upson, standards engineer and wood technologist of the National Lumber Manufacturers Association, has been promoted to the directorship of the eastern division of the association's lumber trade extension department, with headquarters in New York City. He will continue to serve as secretary of the central committee and will still have charge of the association's standardization work. Before joining the staff of the association in 1924 Mr. Upson was for 14 years a member of the United States Forest Service, his final post in the Federal service being that of chief of the section of industrial investigations of the Forest Product Laboratory.

Raymond H. Torrey, field secretary of the National Conference on State Parks, has been made secretary of the American Scenic and Historic Preservation Society. Dr. Edward Hagaman Hall, whom he succeeds, resigned to become secretary of the Municipal Fine Arts Commission of New York.

H. L. Person, assistant entomologist at the Forest Insect Field Laboratory, Palo Alto, Calif., has recently been assigned by the Bureau of Entomology to the California Forest Experiment Station.

Prof. John Bentley, of the forestry department of Cornell University, sailed October 1 for Japan, where he will spend several months in the study of forestry conditions.

Uno. W. Lehtinen, a member of the State forest service of Finland, recently left the United States after spending nearly three years here and in Canada as a student of forestry and of forest products research methods. During the school year 1925-26 Mr. Lehtinen was a forestry student at Yale. Later he visited Canadian pulp mills and sawmills and studied the lumber market in New York City. During the past spring and summer he studied forest products utilization at Syracuse University and research methods at the Forest Products Laboratory.

Thomas J. Mosley has resigned as technical reviewer of the Forest Products Laboratory to accept a position in the extension division, University of Wisconsin.

O. J. Murie, associate biologist of the Bureau of Biological Survey, has been detailed to make a study of the elk problem in the Jackson Hole country, in Wyoming.

C. W. Watson has left his position as assistant professor of silviculture in the School of Forestry of the University of Idaho to enroll in Yale University as a candidate for the Ph. D. degree.

Ivan H. Sims, of the Appalachian Forest Experiment Station, R. E. McArdle, of the Pacific Northwest Forest Experiment Station, and Robert K. Winters, of the Whitman National Forest, are taking a year's leave of absence for graduate work in the School of Forestry and Conservation, University of Michigan. While attending the school all three are serving as junior instructors.

Dr. R. R. Staples, in charge of range investigations at the Government agricultural experiment station at Cedara, Natal, South Africa, toured the United States this summer.

Galen W. Pike, forest ranger on the Colorado National Forest, is spending a year's leave of absence in study at the Yale Forest School.

John E. Aughanbaugh has been appointed to the faculty of the Pennsylvania State Forest School as a substitute for Prof. W. H. Horning, who is taking a year's leave of absence.

Tom O. Bradley has been appointed superintendent of the Mont Alto State Forest and of the State forest nursery at Mont Alto, Pa.

S. V. Fullaway has resigned as chief of the office of forest products, Northern National Forest District, to join the staff of the National Lumber Manufacturers Association. He has been given charge of the Portland, Oreg., office of the association's trade extension department. Mr. Fullaway's former post in the Federal service has been filled by the promotion of Melvin I. Bradner, who has been connected with the forest products office of the northern district since 1923 as specialist in economic investigations.

George M. Turner has been appointed district forester for the southern part of Connecticut.

S. R. Gevorkiantz, junior forester with the Lake States Forest Experiment Station, has gone on leave of absence for a year to take advantage of a Harvard Forest scholarship.

Correction: Louis J. Pessin in leaving the Federal service returned to Texas as plant pathologist at the Texas Agricultural Experiment Station, not as a member of the faculty of the Texas Agricultural College as was reported in the Forest Worker of July, 1927.

Bibliography

A Belgian Book on Silviculture

By E. N. MUNNS, United States Forest Service

One of the few forestry books of major importance that have appeared since the war is the "Manual of Silviculture" of A. Poskin, director of the forest experiment station at Gembloux, Belgium. (A. Poskin: *Traité de Sylviculture*. Bibliothèque Agronomique Belge. 438 pp. 175 fig. Gembloux, 1926.) Incidentally, this is the first work of consequence dealing entirely with Belgian silviculture. Professor Poskin's book in general covers for the silviculture of Belgium very much the same ground as Joylet's does for that of France, but is superior to the French work in that it is far more complete and is more specific in dealing with individual species and with local conditions.

The manual opens with a description of species, giving dendrological and silvical characteristics of both native and foreign trees. The importance in Belgium of roadside, park, and city planting has led to the inclusion of some species chiefly valuable in

arboriculture. Of the foreign tree species described a considerable number are American.

Professor Poskin stresses the value of the mixed forest both from the standpoint of growth and from that of soil improvement, and indicates that under most conditions the mixed stand is economically desirable. He gives an exceedingly full account of numerous cutting methods, pointing out the advantages and disadvantages of each. The silviculture of the important species is carefully outlined and the complete management cycle is indicated for stands from which certain products are desired. In connection with a detailed description of the various elements of nursery and planting practice considerable stress is laid on the importance of procuring seed of good quality and known origin.

Many unusual difficulties of land reclamation and reforestation in Belgium are brought out. For example, in the lowlands drainage ditches are necessary; some forest soils can be made mellow only by cultivation as intense as that practiced on agricultural

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land; and some are so impoverished that they require fertilization by chemicals or even by the raising of legumes and by inoculation with nitrifying bacteria.

Although not confronted with a fire problem such as ours, the Belgians realize the importance of fire protection and have developed a system of lookouts and fire-line construction much like that used in America. One learns with some surprise that caterpillar logging, which is just now coming to be an exceedingly important logging method in this country, has been developed also in Belgium, and that the transportation of logs to the mill by truck is an accepted practice there.

Of the numerous illustrations contained in the book many are poorly reproduced. A disappointingly large amount of space is given to photographs that, like many of those taken for similar purposes by American foresters, fail to show clearly the points the author wants to bring out.

A New Bulletin from Pennsylvania

By C. R. TILLOTSON, United States Forest Service

A bulletin based on extensive local experience and designed for local use is usually authoritative and to the point. That is the case in respect to the recent Bulletin No. 44 of the Pennsylvania Department of Forests and Waters, "Forest Tree Nursery Practice," by J. W. Keller. This bulletin describes the methods and practices that have been found most satisfactory in the production of about 15,000,000 trees a year in the State-owned nurseries of Pennsylvania. It is well worth reading, and is so brief that it can be read in a half hour.

It is not to be expected that nurserymen in other States will subscribe entirely to some of the methods in use in Pennsylvania nurseries, such as using red lead on seed before it is sown, mulching the beds with leaves, pine needles, or straw, and combating seed-eating birds by employing small boys rather than by using screens. They will probably benefit materially, however, from the discussion of methods employed in Pennsylvania to combat diseases and insects, and they can probably employ to advantage in their own nurseries some of the mechanical devices that have been or are being developed at the Pennsylvania nurseries.

Shortleaf Pine Primer

Shortleaf pine is recommended as a desirable and profitable farm crop in Farmers' Bulletin No. 1534, "Shortleaf Pine Primer," on the basis that it "grows rapidly, produces high quality, soft-textured wood, and easily perpetuates itself by means of an abundance of seed, and also, if the young pines are killed back, by sprouting up vigorously from the ground." A map shows the natural range of the species and the region where it grows best, and a table tells what rate of

growth may be expected of it at different ages on good land, on average land, and on poor land. The farmer is advised to cut and market his own timber and is given careful and detailed instructions as to how to estimate the volume of his standing timber and scale his logs. Directions for thinning are accompanied with drawings showing how trees should be chosen for removal. Each step in the raising of shortleaf pine seedlings in nursery beds is explained, beginning with the construction of the beds themselves. The right way to plant the seedlings, with mattock and with dibble, is made clear not only by verbal directions but by eight line drawings. The conclusion discusses the protection of the growing crop from fire and from animals and insect enemies.

The booklet is well illustrated with photographs taken by the author, W. R. Mattoon.

A Form for Computing Tree Measurements

About two-thirds of the labor of computing tree volumes for the purpose of preparing volume tables is eliminated through the use of a new form developed by Lester H. Reineke for the United States Forest Service. This form, Tree Measurements Form 558a, consists primarily in a specially designed graph paper on which the tree measurements are plotted as they are taken in the field. A curve drawn through these points shows the form of the entire tree stem, and volume in cubic feet can be accurately determined by measuring the area under the curve with a planimeter. Volume in board feet can be quickly read from a transparent scale placed over the graph.

The use of this form will result in a saving of time not only in computing volumes but also in field work, since measurements need not be taken at standard intervals along the stem but can be taken at the end of each log as it is cut. Each sheet becomes a complete field and office record for the tree.

Form 558a is now available to the public by purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of \$1 per 100 copies and \$7 per 1,000 copies.

Forest Economics for Oregon Schools

An outline of the "Economics of Forestry" has been prepared by the Portland, Oreg., office of the United States Forest Service for use in the high schools of Oregon. Special care has been taken to localize the treatment of the subject and to explain the organization and aims of the different forestry agencies. The outline is a revision of one, prepared last year at the request of an Oregon high-school principal, that was submitted for criticism to several cooperating agencies and was then tried out in two high schools. In its present form, which occupies 30 mimeographed pages, it has been sent out to each high school in Oregon.

A Pamphlet on French Turpentining Methods

Austin Cary's series of articles on French turpentining methods, which appeared recently in the Naval Stores Review, is being reprinted in a pamphlet entitled "My Trip to France." Copies may be obtained for 30 cents each by addressing Austin Cary, 930 F Street, Washington, D. C.

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and the port authority has been given the power to make regulations for the protection of the port and the safety of persons employed there. The port authority may also make regulations for the protection of the port and the safety of persons employed there. The port authority may also make regulations for the protection of the port and the safety of persons employed there.

America's first colony.

— 5000 citizens of America who will settle in California will come from the United States and Canada. The first colony of Americans will settle in California in 1860, and the second in 1861. A third colony will settle in California in 1862, and the fourth in 1863.

— 5000 Americans will settle in California in 1860, and 5000 more in 1861, and 5000 more in 1862, and 5000 more in 1863.

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A. Palmer's new "Tropicana" hotel.

— 5000 Americans will settle in California in 1860, and 5000 more in 1861, and 5000 more in 1862, and 5000 more in 1863.

Recent people and landmarks.

— 5000 Americans will settle in California in 1860, and 5000 more in 1861, and 5000 more in 1862, and 5000 more in 1863.

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